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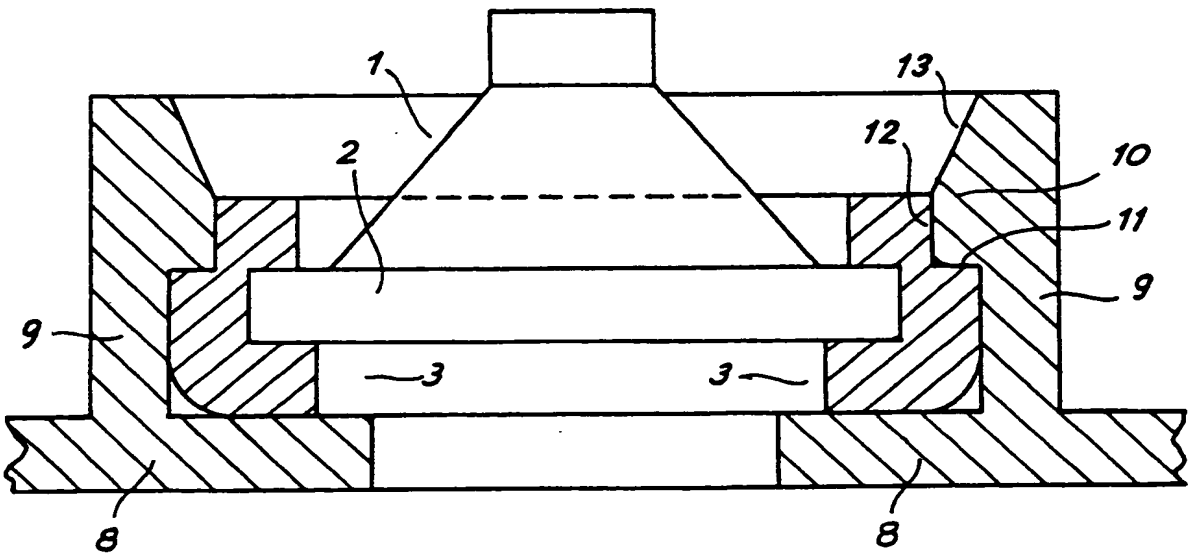
(54) Title: DEVICE FOR THE RETENTION, ACOUSTIC SEALING AND VIBRATION ISOLATION OF AN ELECTROACOUSTIC CONVERTER



(57) Abstract

A device for the retention, acoustic sealing and vibration isolation of an electroacoustic converter (1) in an appara tus casing (8). The device includes an elastic, annular gasket (3), interiorly provided with a trough-like recess intended t close round a flange (2) on the converter, the outside of the gasket having a projecting shoulder face. The converter (1 with its gasket (3) is fitted into a collar (9) on the inside of the apparatus casing and is retained by a plurality of projection (10) on the inside of the collar, these pressing against said shoulder face and against the outside of the gasket, whereb there are also obtained acoustic sealing and vibration isolation.

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DEVICE FOR THE RETENTION, ACOUSTIC SEALING AND VIBRATION ISOLATION OF AN ELECTROACOUSTIC CONVERTER.

TECHNICAL FIELD

The invention relates to a device for the retention, acoustic sealing and vibration isolation of an electroacoustic converter in an apparatus casing. The device includes an elastic, annular gasket, interiorly provided with a trough-like recess intended to close round a flange on the converter.

BACKGROUND ART

A loudspeaker or a microphone is usually retained in an apparatus casing by screwed-on fastening means, which are relatively voluminous.

To achieve acoustic sealing and vibration isolation, such that the sound waves at the back of a loudspeaker will not affect those at the front of it, for example, and that the loudspeaker vibrations will not cause the apparatus casing to vibrate, which affects the sound, it is already known to utilise an elastic, annular gasket, interiorly provided with a trough-like recess, in which the flange of the loudspeaker is thrust during assembly. An example of this is described in US 4152544, according to which the gasket with the loudspeaker thrust into it is fitted with the aid of hooks, which must be screwed tight after the loudspeaker has been put in the right position. Not until this has been done may the apparatus casing be arranged in engagement with the gasket, so that the desired seal and vibration isolation are obtained.

DISCLOSURE OF INVENTION

The object of the present invention is to provide a device of the kind mentioned in the introduction, with which an electroacoustic converter can be fitted easily and quickly, while only a comparatively small space needs to be taken up. This is achieved by exteriorly providing the gasket with a shoulder which, in coaction with a plurality of projections on the inside of a collar on the apparatus casing firmly retains the converter therein.

The distinguishing features of the device are apparent from the claims.

BRIEF DESCRIPTION OF DRAWINGS

The invention will now be described in detail, with reference to the accompanying drawing, on which Figures 1 and 2 illustrate in cross section an embodiment of an elastic, annular gasket before and after it is used for fitting a loudspeaker into an apparatus casing.

BEST MODE FOR CARRYING OUT THE INVENTION

A loudspeaker with an elastic, annular gasket is illustrated in Fig 1, before it is fitted into an apparatus casing. The loudspeaker is denoted by 1 and has a flange 2. The gasket 3 has an annular recess 4 on its inside, and is thrust over the loudspeaker flange 2, so that this flange is practically entirely surrounded by the gasket. The upper part 5 of the gasket in the Figure is suitably directed somewhat radially outwards, which makes it easier to thrust it over the flange 2. The outside of the gasket has a shoulder face 6, which is at least very nearly at right angles to this side. The outside of the gasket is provided with a rounded corner 7 to facilitate fitting the loudspeaker with its gasket into an apparatus casing, which takes place by their being pressed into a collar on the casing.

The loudspeaker with its gasket is illustrated in Figure 2 after fitting into an apparatus casing. The casing is denoted by 8, and on its inside it has a collar 9, into which the loudspeaker 1 with its gasket 3 is fitted. The size and shape of the collar are suited to the loudspeaker, and the part of it facing towards the interior of the casing (upwards in the Figure) is provided with a plurality of projections 10, suitably uniformly spaced and directed towards the centre of the collar. Each one of these projections has an abutment 11 in the shape of a surface perpendicular to the side of the collar and also a surface 12 directed towards the centre of the collar.

The loudspeaker is firmly retained in the collar by the gasket 3 being pressed against the apparatus casing (downwards in the Figure) against the inside of the collar and against the projections 10. The abutment surfaces 11 of the

projections thus engage against the shoulder face 6, so that the gasket is pressed against the apparatus casing 8, and the surfaces 12 engage against the gasket part 5, upward in the Figure, which was originally somewhat outwardly directed, so that this part is pressed against that side of the loudspeaker flange 2 which is drawn upward in the Figure.

The projections 10 each have an inclined surface 13 at their ends facing towards the interior of the apparatus casing. These surfaces, as well as the rounded corner 1 of the gasket have the task of facilitating fitting the loudspeaker and gasket into the collar of the apparatus casing.

The size of the gasket 3, collar 9 and projections 10 are adapted such that the gasket is somewhat compressed on being fitted. The loudspeaker will thus be retained firmly in the apparatus casing while acoustic sealing and vibration isolation are achieved at the same time. With the illustrated device, the fitting operation is also simple, the gasket first being thrust over the flange of the loudspeaker, after which the loudspeaker with the gasket in place is pressed down into a collar on the apparatus casing.

The invention may be varied within the scope of the claims, and may be used for such as microphones instead of loudspeakers. The device may of course have differences in detail with respect to the illustrated embodiment. For example, the shoulder face 6, abutments 11 and remaining surfaces can form angles other than those illustrated to the remaining parts of the device.

CLAIMS

1 Device for the retention, acoustic sealing and vibration isolation of an elecroacoustic converter (1) in an apparatus casing (8), the device including an elastic, annular gasket (3), interiorly provided with a trough-like recess (4) intended to close round a flange (2) on the converter, characterized in that the outside of the gasket (3) has a projecting shoulder face (6), intended, in coaction with a plurality of projections (10) on the inside of a collar (9) on the apparatus casing (8), to firmly retain the converter in the collar while achieving acoustic sealing and vibration isolation against the apparatus casing at the same time.

2 Device as claimed in claim 1, characterized in that each projection (10) has an abutment surface (11) intended to engage against said face (6) for pressing the gasket (3) against the apparatus casing (8), and also a surface (12) directed towards the centre of the collar (9) for engaging against the outside of the part (5) of the gasket intended to be outermost in the collar (9), whereby the gasket is also pressed against the face of the flange (2) facing towards the interior of the apparatus casing.

3 Device as claimed in claim 1 or 2, characterized in that each projection (10) has an inclined surface (13) at its end facing towards the interior of the apparatus casing (8).

4 Device as claimed in claim 1, 2 or 3 characterized in that the outside of the gasket (3) has a rounded corner (1) at its edge intended to be innermost in the collar (9).

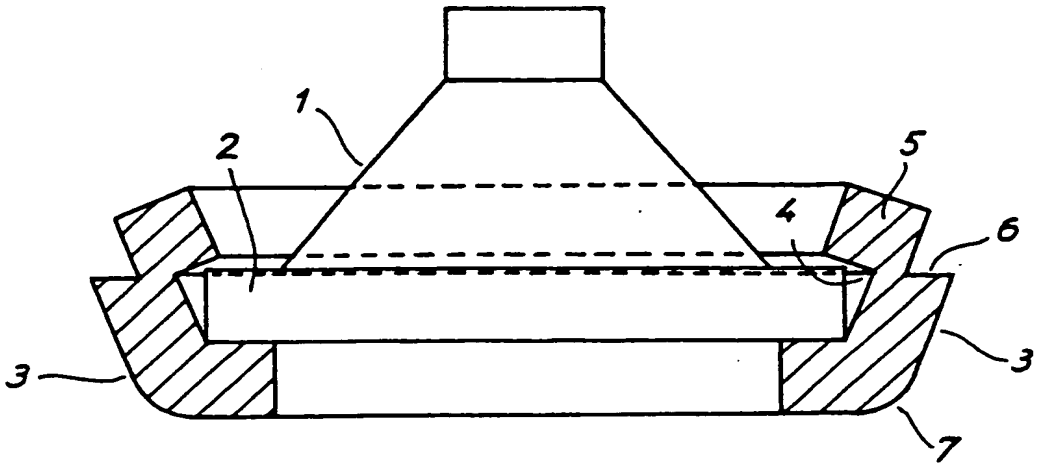

Fig. 1

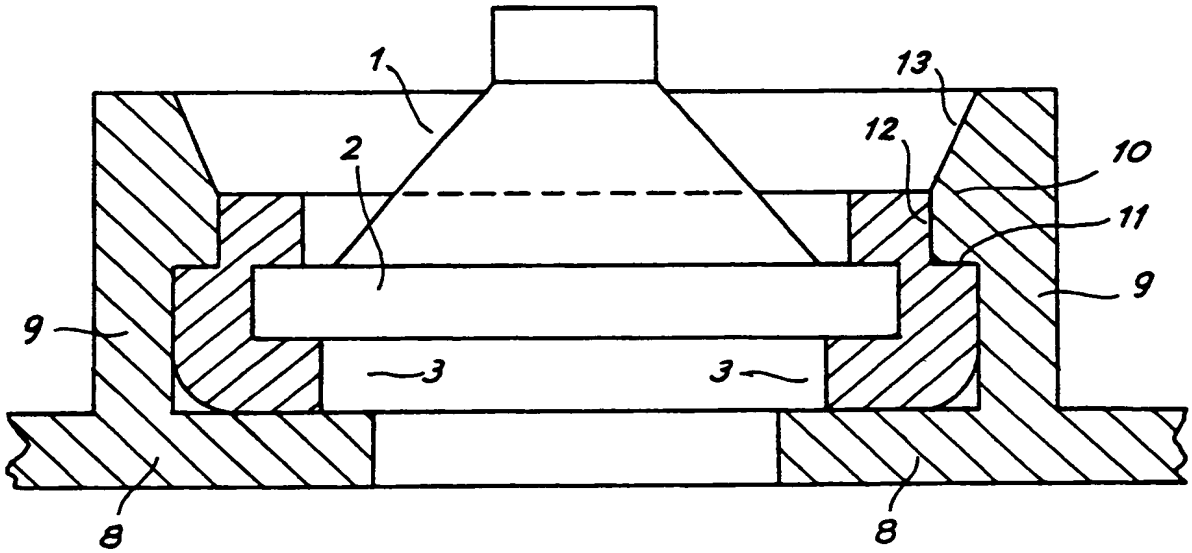

Fig. 2

INTERNATIONAL SEARCH REPORT

International Application No PCT/SE85/00390

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [6]

According to International Patent Classification (IPC) or to both National Classification and IPC 4

H 04 R 1/02

II. FIELDS SEARCHED

Minimum Documentation Searched [7]

Classification System	Classification Symbols
IPC 4	H 04 R 1/02; H 04 N 5/64; A 47 B 81/06
US Cl	181:171, 172, 199; 179:1E, 146; 312:7

Documentation Searched other than Minimum Documentation to the Extent that such Documents are included in the Fields Searched [8]

SE, NO, DK, FI classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT [9]

Category [10]	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No. [13]
A	GB, A, 2 130 843 (A P BESSON LIMITED) 6 June 1984	
A	US, A, 4 152 544 (SANPEI ET AL) 1 May 1979	
A	US, A, 4 072 829 (OGIHARA) 7 February 1978	
A	EP, A1, 0 024 461 (SCHEIDEGGER FRANZ) 11 March 1981	

* Special categories of cited documents: [10]

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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
1985-12-04	1985 -12- 06
International Searching Authority	**Signature of Authorized Officer**
Swedish Patent Office	Sven Fenger-Krog Sven Fenger-Krog

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